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MEMORANDUM

To: Paul Peronard
Libby Technical Assistance Unit (TAU)
From: Bill Brattin, Lynn Woodbury
Date: August 7, 2007
Re: Dust Sampling Approach

Under current site protocols, indoor dust sampling is performed at all properties investigated during the CSS program. It is our understanding that the primary purpose of this sampling is to identify properties where indoor dust levels in regularly-occupied living spaces exceed 5000 s/cm^2, since this is currently identified as a trigger for indoor dust clean-up.

You have asked us to investigate whether it might be possible to use information on the presence or absence of one or more other triggers for clean-up actions to identify properties where dust sampling might be unnecessary.

Table 1 presents summary statistics for dust samples[a] collected from living spaces and frequently used areas at OU4 properties stratified by sampling program. As seen, the number of samples with detectable levels of Libby amphibole (LA) structures by TEM tends to be low (<10%) for the general investigatory programs (Phase 1/1R, Contaminant Screening Study, Design Phase). The detection frequency is higher for the more focused programs, such as the Phase 2 and SQAPP activity-based sampling (ABS) programs. However, this increase in detection frequency may be due to the use of lower target sensitivities in these programs. The frequency of dust samples above the clean-up trigger of 5,000 s/cm^2 is less than 2% across all sampling programs. A total of 71 dust samples from 55 properties within OU4 exceed the dust trigger.

Table 2 stratifies dust data according to whether or not a property has one or more dust samples above 5000 s/cm^2, and shows the frequency with which other triggers are present at these properties. The goal is to identify one or more triggers that are nearly always present if indoor dust exceeds 5000 s/cm^2. As seen, no one trigger by itself is a reliable indicator of the presence of elevated indoor dust levels, but if the presence of

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[a] All data presented in this memo reflect information available in the Libby2DB based on a download performed on July 25, 2007. Dust data set is restricted to microvacuum dust field samples from Libby OU4 properties collected from living spaces or frequently used areas (e.g., shed, garage samples, etc. have been excluded).

one or more triggers is used as the criterion, then 53 of the 54 properties[b] (98%) with dust levels above 5,000 s/cm^2 would have been identified on the basis of this combined indicator. This corresponds to a false negative rate of 1/54 (2%). It is a risk management judgment whether or not this rate is acceptable, but false negative rates up to 5% are often considered acceptable by EPA.

Conclusion

Available data suggest that the incidence of properties with dust levels over 5000 s/cm^2 in living areas in Libby is relatively low (< 2%). When a property does have a dust level of 5000 s/cm^2 or higher, it is nearly always (53 out of 54 cases) accompanied by the presence of one or more other triggers. Therefore, if dust sampling were omitted at properties where no other triggers were present, the risk of failing to recognize a property that warranted indoor dust cleanup would be about 1/54 (<2%).

[b] In Table 1, a total of 55 properties were identified with dust levels above 5,000 s/cm^2. Two of these properties were representative of a single duplex unit. For the purposes of determining property triggers the Remediation Status Query combined these two units into a single property group. Hence, the total number of properties in the discussion of property triggers is 54 not 55.

Table 1
Summary Statistics for Dust Field Samples by Sampling Program

Program	# of Samples	# of Detects	Detect. Freq. (%)	# Samples ≥ 5,000 s/cm^2	Exceed. Freq. (%)	Avg LA Dust Loading (s/cm^2)	Max LA Dust Loading (s/cm^2)	Avg Sens. (1/cm^2)
Phase 1/1R	2,249	307	14%	60	2.7%	615	105,356	1,516
Contaminant Screening Study	1,487	92	6.2%	6	0.4%	142	53,444	545
Design Phase	2,169	101	4.7%	4	0.2%	52	8,907	384
Clean-up Evaluation	32	0	0%	0	0%	0	0	269
Phase 2 ABS	38	15	39%	1	2.6%	504	8,492	1,079
SQAPP, Task 2 ABS	16	10	63%	0	0%	74	742	16
SQAPP, Task 6-9	14	4	29%	0	0%	12	71	26
SQAPP, Task 10	12	4	33%	0	0%	196	1,586	195
All Dust Samples	6,017	533	8.9%	71	1.2%	288	105,356	849

Restricted to microvacuum dust field samples from Libby OU4 collected from living spaces or frequently used areas.
Libby2DB Download Date: 7/25/07

ABS = Activity Based Sampling
SQAPP = Supplemental RI QAPP

71 samples from 55 properties

Table 2
Frequency of Potential Indicators

Property Classification	Total Number of Properties	Remediation Status Query Trigger											
		2 - Outdoor Verm In Large Use Area		3 - Secondary Indication		4 - Vermiculite Insulation In Attic		6 - PLM Soil ≥ 1%		7 - Outdoor Verm In Expected Use Area		8 -PLM Gravimetric ≥ 1%		9 - PLM Soil Detects < 1%		One or more Triggers	
Dmax < 5,000	1,373	491	*36%*	883	*64%*	548	*40%*	67	*5%*	720	*52%*	6	*0%*	656	*48%*	1,311	*95%*
Dmax ≥ 5,000	54	23	*43%*	35	*65%*	26	*48%*	8	*15%*	25	*46%*	0	*0%*	39	*72%*	53	*98%*